

The GOES-R Series Geostationary Lightning Mapper (GLM)

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The Geostationary Operational Environmental Satellite (GOES-R) is the next series to follow the existing GOES system currently operating over the Western Hemisphere. Superior spacecraft and instrument technology will support expanded detection of environmental phenomena, resulting in more timely and accurate forecasts and warnings. Advancements over current GOES capabilities include a new capability for total lightning detection (cloud and cloud-to-ground flashes) from the Geostationary Lightning Mapper (GLM), which will have just completed Critical Design Review and move forward into the construction phase of instrument development. The GLM will operate continuously day and night with near-uniform spatial resolution of 8 km with a product refresh rate of less than 20 sec over the Americas and adjacent oceanic regions. This will aid in forecasting severe storms and tornado activity, and convective weather impacts on aviation safety and efficiency. In parallel with the instrument development (an engineering development unit and 4 flight models), a GOES-R Risk Reduction Team and Algorithm Working Group Lightning Applications Team have begun to develop the Level 2 algorithms, cal/val performance monitoring tools, and new applications. Proxy total lightning data from the NASA Lightning Imaging Sensor (LIS) on the Tropical Rainfall Measuring Mission (TRMM) satellite and regional ground-based lightning networks are being used to develop the pre-launch algorithms, test data sets, and applications, as well as improve our knowledge of thunderstorm initiation and evolution. In this presentation we review the planned implementation of the instrument and suite of operational algorithms.